Appendix D

Spatial Summary for Simazine Uses

Use List

The following use list is derived from label use information. It is used as a basis for the spatial analysis of simazine.

Table 1 Use list from labels

Category	Use
Cultivated Crops	Avocado, blackberry, blueberry, boysenberry, corn, cranberry, loganberry, raspberry
Orchards/Vineyards	Almond, apple, cherry, filbert, grapefruit, grapes, hazelnut, lemon, macadamia nut, nectarine, olives, orange, peach, pear, walnut
Turf	Golf courses, sod farms
Forest	Christmas trees, tree plantations, shelterbelts
Non-agricultural (mapped)	Rights-of-way, highways
Non-agricultural (not mapped)	Commercial, industrial, institutional premises, equipment

Terrestrial Use Determination

Sources and Methods

Base mapping layers for the terrestrial analysis component were obtained from the National Land-cover Dataset (NLCD 2001) for the majority of land use types and the California GAP data (6/98) for the orchards and vineyard uses. The NLCD is a recently released national land use dataset and the GAP is from the Biogeography Lab from UCLA-Santa Barbara. These raster files were converted to vector and used in the analysis. The rights-of-way landuse layer was derived from TeleAtlas (2006) for roads and rail, and the U.S. Department of Transportation's National Pipeline Dataset (1999). Table 2 shows the land-cover sources used.

Table 2 Land cover data sources.

Land Cover Data Sources			
Layer name	**Base source**	**Description**	**non-NASS**
Cultivated Crops	NLCD	Grid code 82: Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.	No
Developed,	NLCD	Grid code 24: Includes highly developed areas where people reside or	Yes

Land Cover Data Sources			
Layer name	**Base source**	**Description**	**non-NASS**
High Intensity		work in high numbers. Examples include apartment complexes, row houses and commercial/industrial. Impervious surfaces account for 80 to100 percent of the total cover.	
Developed, Low Intensity	NLCD	Grid code 22: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20-49 percent of total cover. These areas most commonly include single-family housing units.	Yes
Developed, Medium Intensity	NLCD	Grid code 23: Includes areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50-79 percent of the total cover. These areas most commonly include single-family housing units.	Yes
Developed, Open Space	NLCD	Grid code 21: Includes areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.	Yes
Forest	NLCD	Grid codes 41,42,43: Deciduous, evergreen and mixed. Areas dominated by trees generally greater than 5 meters tall, and greater than 20% of total vegetation cover.	Yes
Open Water	NLCD	Grid code 11: All areas of open water, generally with less than 25% cover of vegetation or soil.	Yes
Orchards and vineyards	CA GAP	Grid codes 11210, 11211 and 11212. This is the only CA GAP reference.	No
Pasture/Hay	NLCD	Grid codes 81: Areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.	No
Wetlands	NLCD	Grid codes 90, 95: Woody wetlands and emergent herbaceous.	Yes
Rights-of-Way	US DOT; TeleAtlas	A derived class, using road, rail, and pipeline coverages.	Yes
Turf	NLCD	A derived NLCD class based on developed classes and the impervious surface layer with corrections applied.	Yes

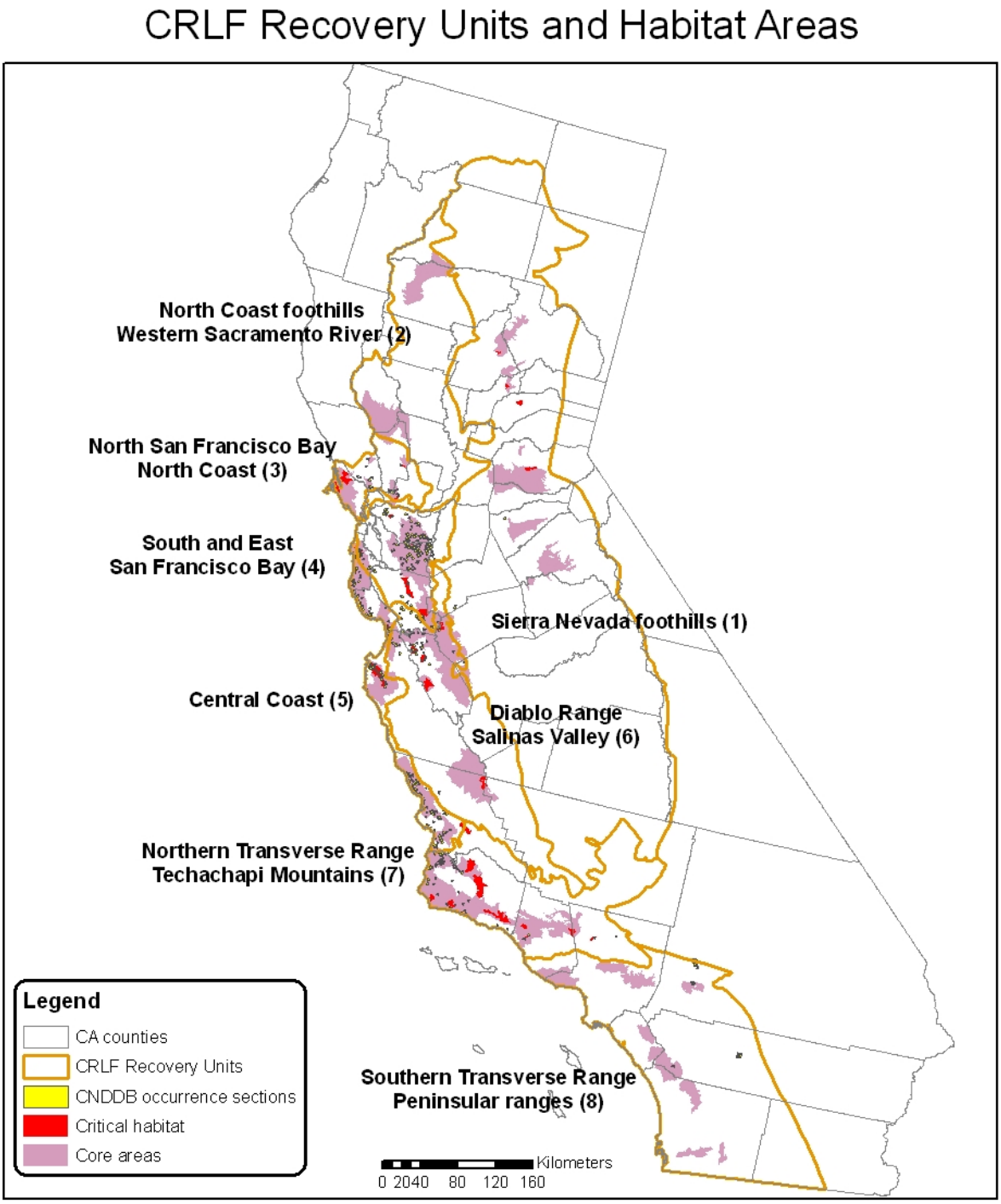
U.S. Department of Agriculture's National Agriculture Statistics Service (NASS) census dataset, 2002 was used to determine whether a crop was grown in a particular county. This census dataset provides survey information over five years on agricultural practices and is used mainly for cultivated or agriculture crops. Chemical labeled uses were matched to NASS uses; an agriculture use match would result in a mapped area for one or more counties. For uses that are not agricultural, the use is assumed to occur in every county where that particular land-cover occurs within California (*i.e.* a 'forestry' labeled use is assumed to potentially occur in all California counties where NLCD indicates there is forest land-cover).

The 'Initial Area of Concern' represents the use type and its occurrence in the NASS or NLCD datasets. These are the areas where the pesticide has potential to be applied. The 'Action Area' represents the 'Initial Area of Concern' plus a buffer distance. There may not always be a buffer

distance in which case the ‘Action Area’ is the same as the ‘Initial Area of Concern’. The overlap of the ‘Action Area’ with CRLF habitat areas is named ‘Overlapping Area’ and is the target of spatial analysis. The ratio of Overlapping Area to CRLF habitat area is reported for each of eight Recovery Units (RU1 to RU8).

There are three types of CRLF habitat areas considered in this assessment: Critical Habitat (CH); Core Areas; and California Natural Diversity Database (CNDDB) occurrence sections (EPA Region 9). Critical habitat areas were obtained from the U.S. Fish and Wildlife Service’s (USFWS) final designation of critical habitat for the CRLF (USFWS 2006). Core areas were obtained from USFWS’s Recovery Plan for the CRLF (USFWS 2002). The occurrence sections represent an EPA-derived subset of occurrences noted in the CNDDB. They are generalized by the Meridian Range and Township Section (MTRS) one square mile units so that individual habitat areas are obfuscated. As such, only occurrence section counts are provided and not the area potentially affected.

Reference Map



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. June, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Spatially Determined Analysis for Agriculture, Orchard/vineyard, Turf and Forestry Uses

Table 3a. Spatial summary results for Action Area (8741 ft. buffer) for agriculture, orchards, turf, forestry and rights-of-way uses.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer) [1]	63511	9455	1833	4259	3516	6423	5085	9549	103631
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping habitat area (sq km)	3654	2681	1320	3267	3647	4945	4913	3306	27733
Percent area affected	*100%*	*98%*	*100%*	*100%*	*100%*	*93%*	*100%*	*99%*	*98%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	13	3	70	324	276	120	90	33	929

1.*Does not include rights-of-way area not coincident with agriculture, orchards, turf and forestry. Actual IAC area will be slightly higher.*

Table 3b. Spatial summary results for relevant portion of the Action Area (3891 ft. buffer) for agriculture, orchards, turf, forestry and rights-of-way uses.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer) [1]	63511	9455	1833	4259	3516	6423	5085	9549	103631
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	3654	2681	1320	3267	3647	4945	4913	3306	27733
Percent area affected	*100%*	*98%*	*100%*	*100%*	*100%*	*93%*	*100%*	*99%*	*98%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	13	3	70	324	276	120	90	33	929

1. *Does not include rights-of-way area not coincident with agriculture, orchards, turf and forestry. Actual IAC area will be slightly higher.*

Table 3c. Spatial summary for "likely to adversely affect" area (184 ft. buffer) of the Action Area for agriculture, orchards, turf and forestry uses.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer)	63511	9455	1833	4259	3516	6423	5085	9549	103,631
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	2801	812	601	549	2576	2372	2514	869	13,094
Percent area affected	*77%*	*30%*	*45%*	*17%*	*71%*	*45%*	*51%*	*26%*	*46%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected within habitat areas only.	5	2	31	226	237	77	71	7	656

Table 3d. Spatial summary for "likely to adversely affect" area (850 ft. buffer) of the Action Area for Rights-of-Way.

Measure	RU1	RU2	RU3	RU4	RU5	RU6	RU7	RU8	Total
Initial Area of Concern (no buffer)	2783	842	248	7397	234	625	530	2446	15,105
Established species range area (CH plus core in sq km)	3654	2742	1323	3279	3650	5306	4917	3326	28,197
Overlapping area (sq km)	553	356	224	648	568	570	690	465	4074
Percent area affected	*15%*	*13%*	*17%*	*20%*	*16%*	*11%*	*14%*	*14%*	*14%*
Established occurrence sections (959 total; 30 outside recovery units)	13	3	70	324	276	120	90	33	929
# Occurrence sections affected	6	0	37	117	65	50	13	18	306

Habitat Area Overlap for Simazine Uses

Habitat Area includes Core and Critical Habitat areas. Sections are not included in the area calculations.

Ag, Orchard, Turf, Forestry

184 ft buffer

Recovery Unit 1 — 3,654 sq km

	Habitat Area	Use Overlap %
Amador	128.5	3.5%
Butte	372.8	10.2%
Calaveras	305.4	8.4%
El Dorado	1,077.7	29.5%
Mariposa	23.8	0.7%
Nevada	28.9	0.8%
Plumas	301.8	8.3%
Sacramento	9.8	0.3%
Tuolumne	464.9	12.7%
Yuba	87.9	2.4%
Total area for RU 1:	2,801	76.7%

Recovery Unit 2 — 2,742 sq km

	Habitat Area	Use Overlap %
Lake	612.9	22.4%
Napa	0.2	0.0%
Shasta	15.7	0.6%
Tehama	183.1	6.7%
Total area for RU 2:	812	29.6%

Recovery Unit 3 — 1,320 sq km

	Habitat Area	Use Overlap %
Marin	420.4	31.8%
Napa	91.8	7.0%
Solano	37.7	2.9%
Sonoma	51.0	3.9%
Total area for RU 3:	601	45.5%

Recovery Unit 4 — 3,278 sq km

	Habitat Area	Use Overlap %
Alameda	14.9	0.5%
Contra Costa	13.9	0.4%
San Joaquin	2.2	0.1%
Santa Clara	517.7	15.8%
Stanislaus	0.1	0.0%
Total area for RU 4:	549	16.7%

Recovery Unit 5 — 3,647 sq km

	Habitat Area	Use Overlap %
Monterey	747.1	20.5%
San Luis Obispo	723.4	19.8%
San Mateo	1,105.8	30.3%
Total area for RU 5:	2,576	70.6%

Recovery Unit 6 — 5,307 sq km

	Habitat Area	Use Overlap %
Fresno	7.2	0.1%
Kern	0.7	0.0%
Merced	91.3	1.7%
Monterey	65.4	1.2%
San Benito	544.9	10.3%
San Luis Obispo	93.2	1.8%
Santa Clara	584.3	11.0%
Stanislaus	985.5	18.6%
Total area for RU 6:	2,373	44.7%

Recovery Unit 7 — 4,916 sq km

	Habitat Area	Use Overlap %
Los Angeles	2.3	0.0%
San Luis Obispo	1.5	0.0%
Santa Barbara	1,796.9	36.5%
Ventura	714.2	14.5%
Total area for RU 7:	2,515	51.2%

Recovery Unit 8 — 3,326 sq km

	Habitat Area	Use Overlap %
Los Angeles	296.1	8.9%
Orange	28.0	0.8%
Riverside	115.3	3.5%
San Bernardino	62.1	1.9%
San Diego	343.0	10.3%
Ventura	24.4	0.7%
Total area for RU 8:	869	26.1%

Rights-of-Way

850 ft buffer

Recovery Unit 1 — 3,654 sq km

	Habitat Area	Use Overlap %
Amador	53.0	1.4%
Butte	38.6	1.1%
Calaveras	107.0	2.9%
El Dorado	254.9	7.0%
Mariposa	11.4	0.3%
Nevada	3.7	0.1%
Plumas	30.9	0.8%
Sacramento	9.5	0.3%
Tuolumne	26.4	0.7%
Yuba	17.3	0.5%
Total area for RU 1:	553	15.1%

Recovery Unit 2 — 2,742 sq km

	Habitat Area	Use Overlap %
Colusa	0.5	0.0%
Lake	154.4	5.6%
Marin	5.2	0.2%
Napa	27.4	1.0%
Shasta	42.4	1.5%
Solano	25.9	0.9%
Tehama	85.8	3.1%
Yolo	14.8	0.5%
Total area for RU 2:	356	13.0%

Recovery Unit 3 — 1,320 sq km

	Habitat Area	Use Overlap %
Marin	138.9	10.5%
Napa	30.7	2.3%
Solano	28.8	2.2%
Sonoma	25.3	1.9%
Total area for RU 3:	224	16.9%

Recovery Unit 4 — 3,278 sq km

	Habitat Area	Use Overlap %
Alameda	301.5	9.2%
Contra Costa	164.3	5.0%
San Joaquin	5.9	0.2%
San Mateo	156.0	4.8%
Santa Clara	20.3	0.6%
Total area for RU 4:	648	19.8%

Recovery Unit 5 — 3,647 sq km

	Habitat Area	Use Overlap %
Monterey	82.1	2.3%
San Luis Obispo	212.9	5.8%
San Mateo	108.7	3.0%
Santa Clara	1.1	0.0%
Santa Cruz	162.8	4.5%
Total area for RU 5:	568	15.6%

Recovery Unit 6 — 5,307 sq km

	Habitat Area	Use Overlap %
Fresno	8.3	0.2%
Kern	6.8	0.1%
Merced	37.7	0.7%
Monterey	164.1	3.1%
San Benito	190.9	3.6%
San Luis Obispo	127.4	2.4%
Santa Clara	10.4	0.2%
Santa Cruz	23.9	0.5%
Total area for RU 6:	570	10.7%

Recovery Unit 7 — 4,916 sq km

	Habitat Area	Use Overlap %
Los Angeles	44.1	0.9%
San Luis Obispo	15.1	0.3%
Santa Barbara	517.2	10.5%
Ventura	113.7	2.3%
Total area for RU 7:	690	14.0%

Recovery Unit 8 — 3,326 sq km

	Habitat Area	Use Overlap %
Los Angeles	179.2	5.4%
Orange	24.1	0.7%
Riverside	60.2	1.8%
San Bernardino	36.0	1.1%
San Diego	134.2	4.0%
Ventura	31.2	0.9%
Total area for RU 8:	465	14.0%

Area of LAA (all uses) with Habitat

(Core and Critical Habitat)

Recovery Unit 1 **3,654 sq km**

	LAA area	% LAA in RU
Amador	152.5	4.2%
Butte	364.0	10.0%
Calaveras	343.8	9.4%
El Dorado	1,091.0	29.9%
Mariposa	29.4	0.8%
Nevada	27.2	0.7%
Plumas	281.3	7.7%
Sacramento	18.1	0.5%
Tuolumne	447.2	12.2%
Yuba	83.2	2.3%
Total area for RU 1:	2,838	77.7%

Recovery Unit 2 **2,742 sq km**

	LAA area	% LAA in RU
Colusa	0.5	0.0%
Lake	503.5	18.4%
Marin	7.2	0.3%
Napa	88.8	3.2%
Shasta	51.1	1.9%
Solano	32.8	1.2%
Tehama	256.4	9.4%
Yolo	81.7	3.0%
Total area for RU 2:	1,022	37.3%

Recovery Unit 3 **1,320 sq km**

	LAA area	% LAA in RU
Marin	486.9	36.9%
Napa	133.5	10.1%
Solano	48.9	3.7%
Sonoma	66.3	5.0%
Total area for RU 3:	736	55.7%

Recovery Unit 4 **3,278 sq km**

	LAA area	% LAA in RU
Alameda	744.3	22.7%
Contra Costa	374.2	11.4%
San Joaquin	25.7	0.8%
San Mateo	283.7	8.7%
Santa Clara	507.2	15.5%
Stanislaus	48.0	1.5%
Total area for RU 4:	1,983	60.5%

Recovery Unit 5 **3,647 sq km**

	LAA area	% LAA in RU
Monterey	794.8	21.8%
San Luis Obispo	801.6	22.0%
San Mateo	579.7	15.9%
Santa Clara	2.9	0.1%
Santa Cruz	577.3	15.8%
Total area for RU 5:	2,756	75.6%

Recovery Unit 6 **5,307 sq km**

	LAA area	% LAA in RU
Fresno	14.7	0.3%
Kern	7.3	0.1%
Merced	178.1	3.4%
Monterey	385.2	7.3%
San Benito	539.3	10.2%
San Luis Obispo	192.1	3.6%
Santa Clara	100.6	1.9%
Santa Cruz	44.3	0.8%
Stanislaus	28.6	0.5%
Total area for RU 6:	1,490	28.1%

Recovery Unit 7 **4,916 sq km**

	LAA area	% LAA in RU
Los Angeles	93.5	1.9%
San Luis Obispo	74.0	1.5%
Santa Barbara	1,816.8	37.0%
Ventura	812.6	16.5%
Total area for RU 7:	2,797	56.9%

Recovery Unit 8 **3,326 sq km**

	LAA area	% LAA in RU
Los Angeles	393.9	11.8%
Orange	48.2	1.5%
Riverside	132.2	4.0%
San Bernardino	77.3	2.3%
San Diego	362.7	10.9%
Ventura	43.4	1.3%
Total area for RU 8:	1,058	31.8%

Spatially Determined Analysis for Waterbodies

The aquatic analysis uses a downstream dilution model to determine quantitative effects based on high RQ aquatic organisms and land-cover data, with the criteria that streams with upstream catchments greater than 5% of the land class of concern are used. Although the results are reported in linear units, the procedure uses area-based land-cover data to seed stream reaches downstream with percent crop area (PCA) values.

Aquatic Action Area Delineation

The aquatic analysis uses a downstream dilution model to determine the downstream extent of exposure in streams and rivers. The downstream component, combined with the initial area of concern, define the aquatic action area. The downstream extent includes the area where the EEC could potentially be above levels that would exceed the most sensitive LOC. The model calculates two values, the dilution factor (DF) and the threshold Percent Cropped Area (PCA). The dilution factor (DF) is the maximum RQ/LOC, and the threshold PCA is the inverse value represented as a percent.

The dilution model uses the NHDPlus data set (http://www.horizon-systems.com/nhdplus/) as the framework for the downstream analysis. The NHDPlus includes several pieces of information that can be used to analyze downstream effects. For each stream reach in the hydrography network, the data provide a tally of the total area in each NLCD land cover class for the upstream cumulative area contributing to the given stream reach. Using the cumulative land cover data provided by the NHDPlus, an aggregated use class is created based on the classes listed in Table 4. A cumulative PCA is calculated for each stream reach based on the aggregate use class (divided by the total upstream contribution area).

The dilution model traverses downstream from each stream segment within the initial area of concern. At each downstream node, the threshold PCA is compared to the aggregate cumulative PCA. If the cumulative PCA exceeds the threshold then the stream segment is included in the downstream extent. The model continues traversing downstream until the cumulative PCA no longer exceeds the threshold. The additional stream length by the downstream analysis is presented in Table 5.

Table 4 Aquatic spatial summary results

Measure	**Total**
Total California stream kilometers	332,962
Total stream kilometers in initial area of concern	199,830
Total stream kilometers added downstream (based on listed species LOC; downstream factor 4.2%)	18,704
Total stream kilometers in action area	**218,534**
Total stream kilometers added downstream (based on non-listed species LOC; downstream factor 27.8%)	10,885
Total stream kilometers in relevant portion of action area	**210,715**

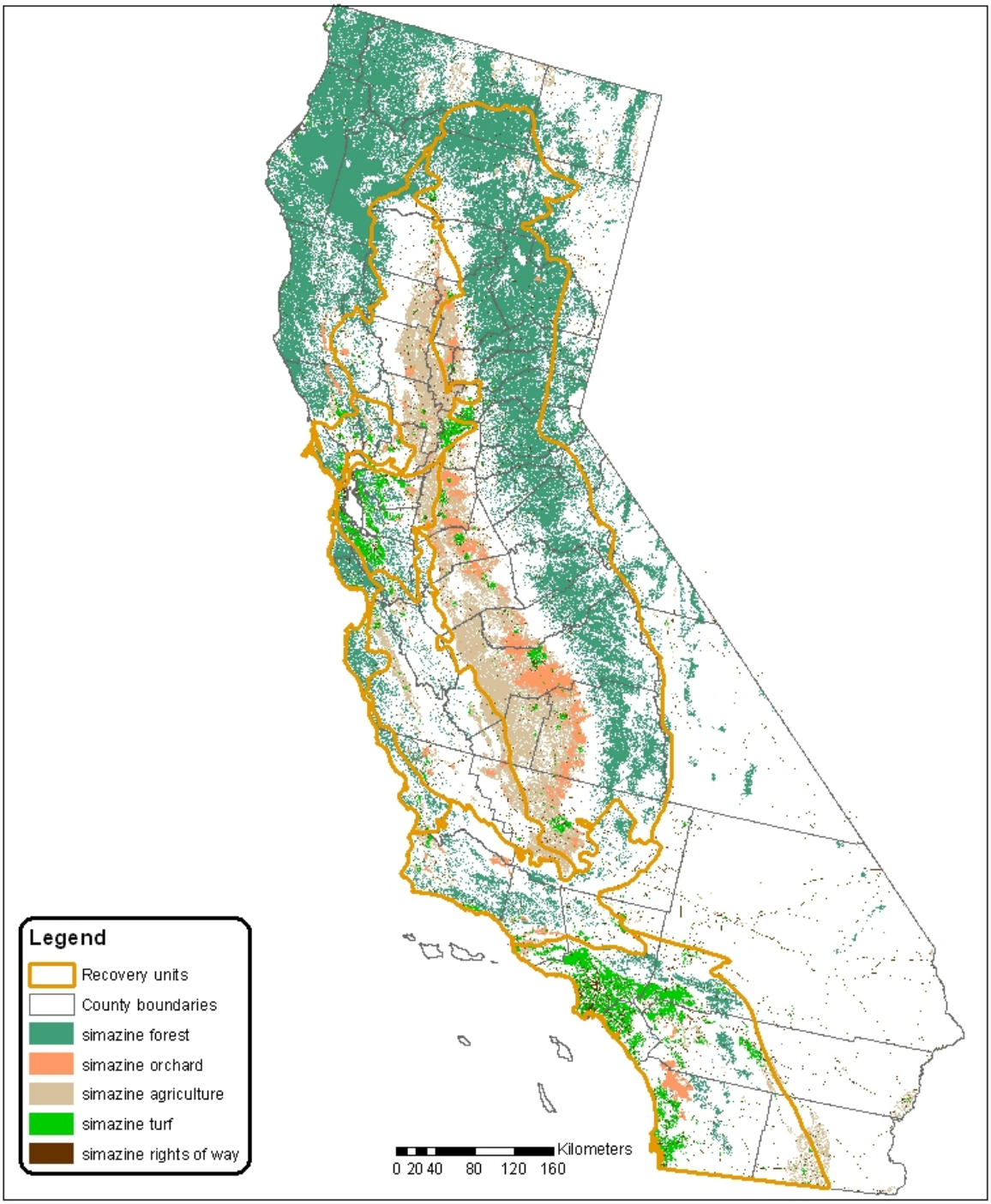
A Note on Limitations and Constraints of Tabular and Geospatial Sources

The geographic data sets used in this analysis are limited with respect to their accuracy and timeliness. The NASS Census of Agriculture (NASS 2002) contains adjusted survey data collected prior to 2002. Small use sites, and minor uses (e.g., specialty crops) tend to be underrepresented in this dataset. The National Land Cover Dataset (NLCD 2001) represents the best comprehensive collection of national land use and land cover information for the United States representing a range of years from 1994 – 1998. Because the NLCD does not explicitly include a class to represent orchard and vineyard landcover, California Gap Analysis Project data (CaGAP 1998) were overlaid with the NCLD and used to identify these areas.

Hydrographic data are from the NHDPlus dataset (http://www.horizon-systems.com/nhdplus/). NHDPlus contains the most current and accurate nationwide representation of hydrologic data. In some isolated instances, there are, however, errors in the data including missing or disconnected stream segments and incorrect assignment of flow direction. Spatial data describing the recovery zones and core areas are from the US Fish and Wildlife Service. The data depicting survey sections in which the species has been found in past surveys is from the California Natural Diversity Database (http://www.dfg.ca.gov/bdb/html/cnddb.html).

The relatively coarse spatial scale of these datasets precludes use of the data for highly localized studies, therefore, tabular information presented here is limited to the scale of individual Recovery Units. Additionally, some labeled uses are not possible to map precisely due to the lack of appropriate spatial data in NLCD on the location of these areas. To account for these uncertainties, the spatial analysis presented here is conservative, and may overestimate the areal extent of actual pesticide use in California.

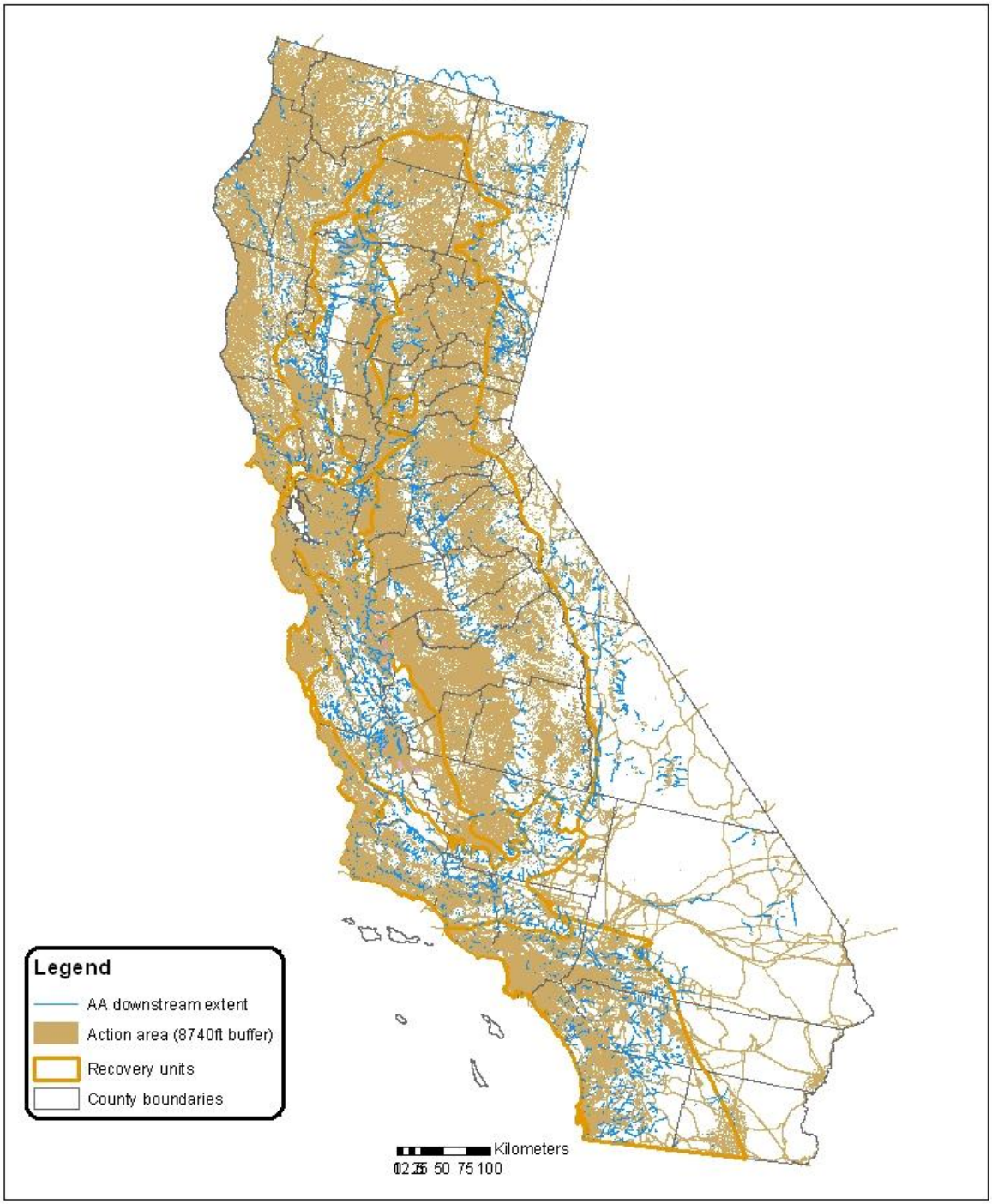
Initial Area of Concern for Simazine Use



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

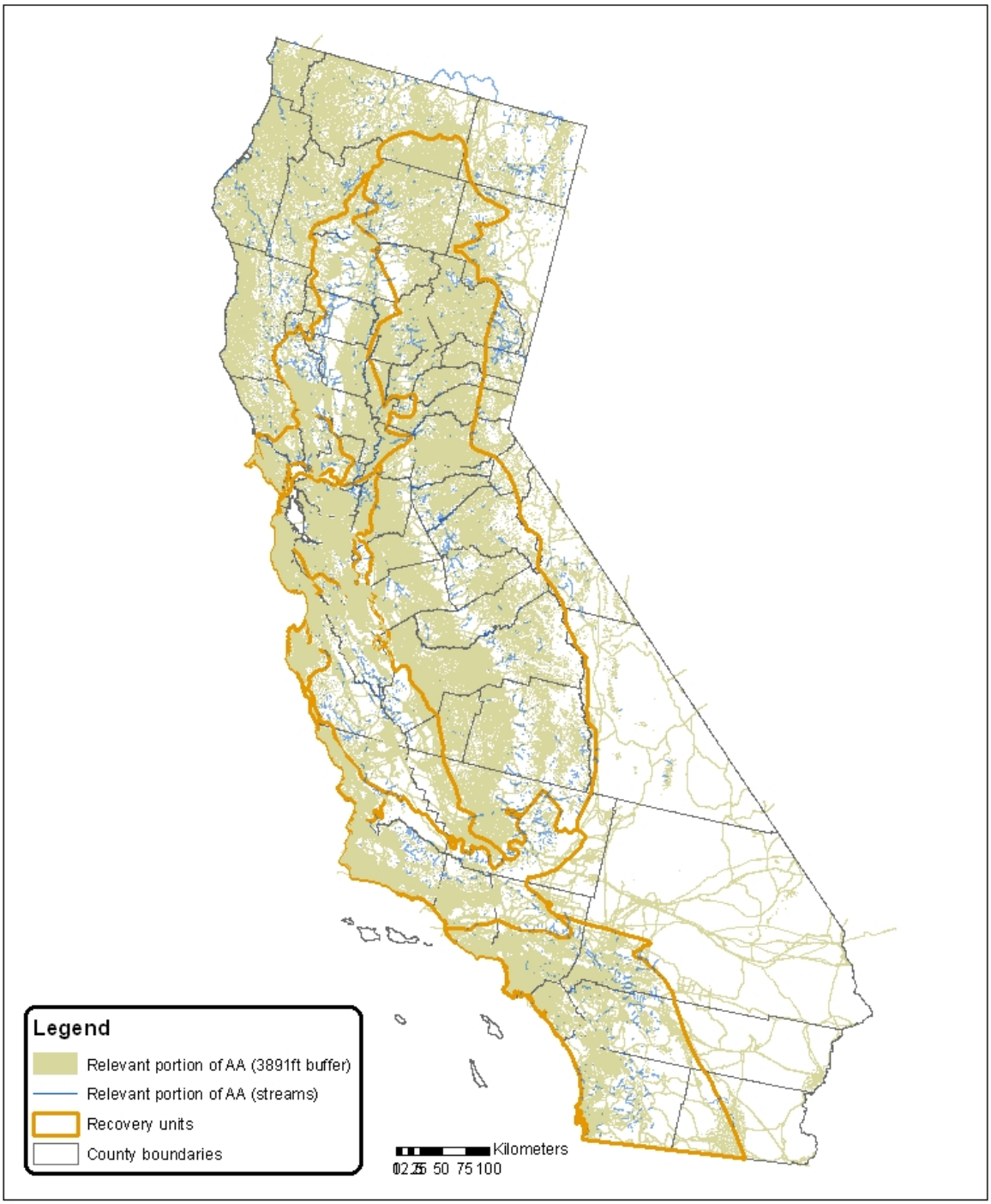
Action Area for Simazine Use



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

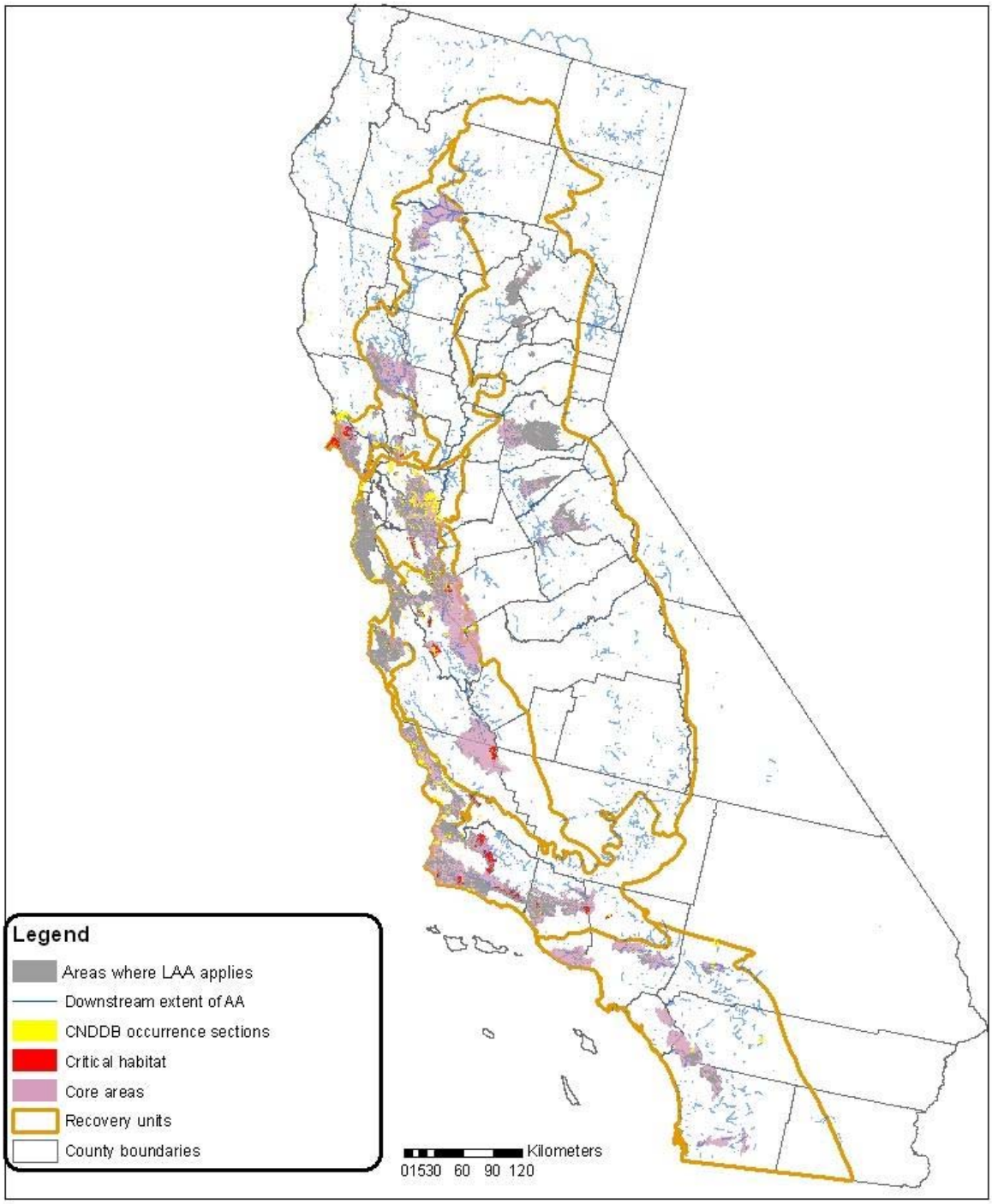
Relevant Portion of the Action Area for Simazine Use



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

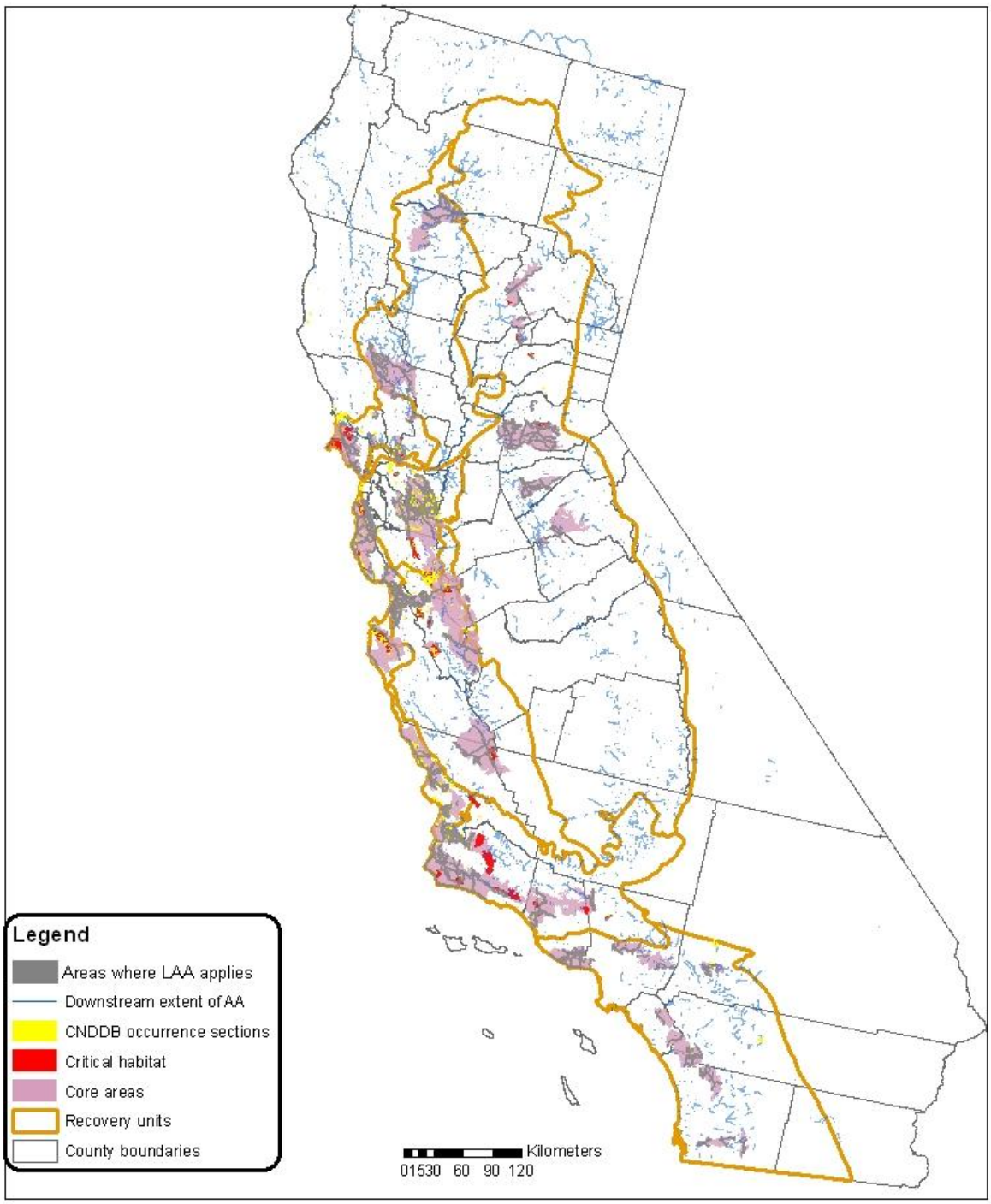
Areas where LAA applies (Ag, Orchard, Turf & Forest with 184-ft buffer)



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

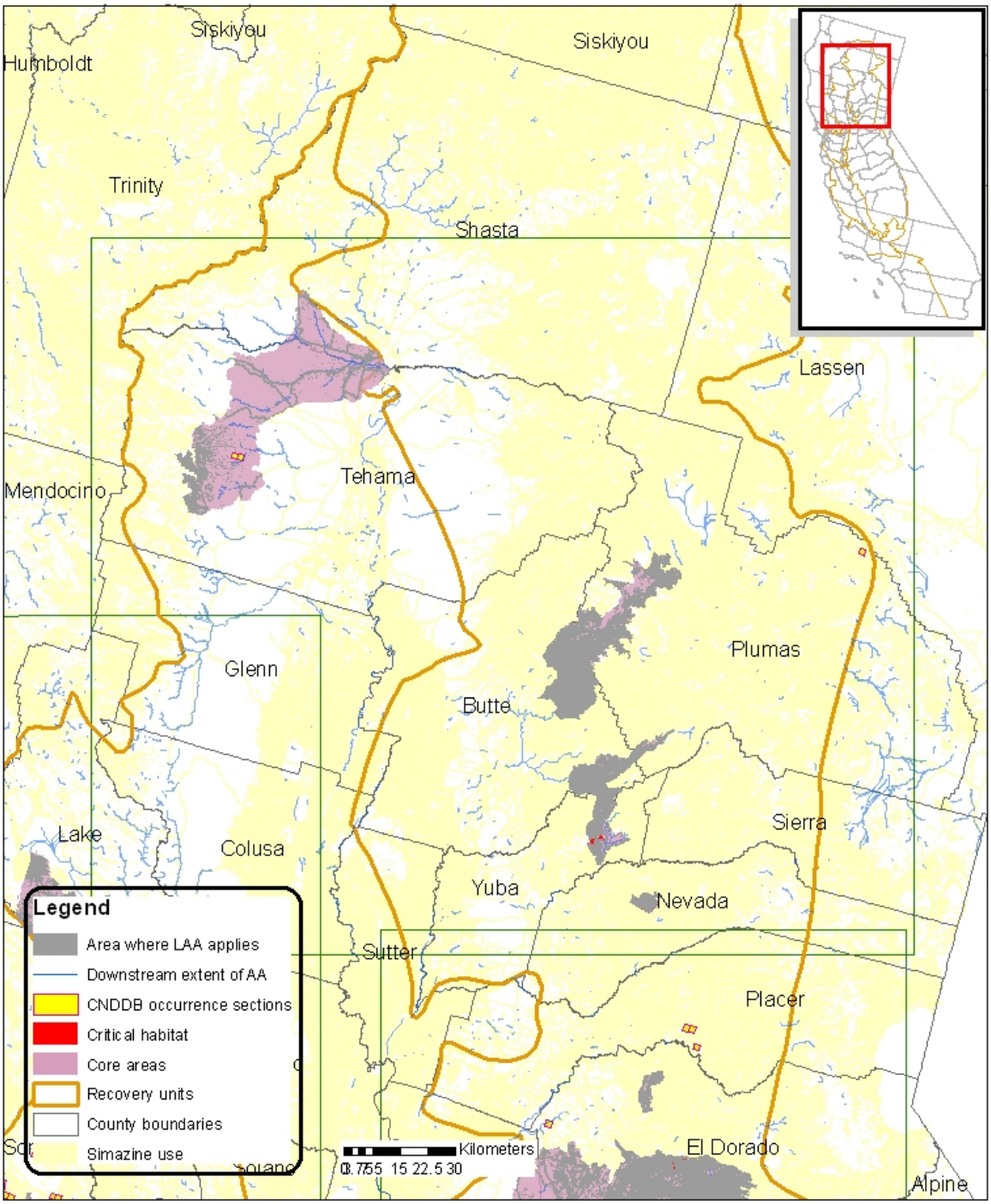
Areas where LAA applies (ROW with 850-ft buffer)



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

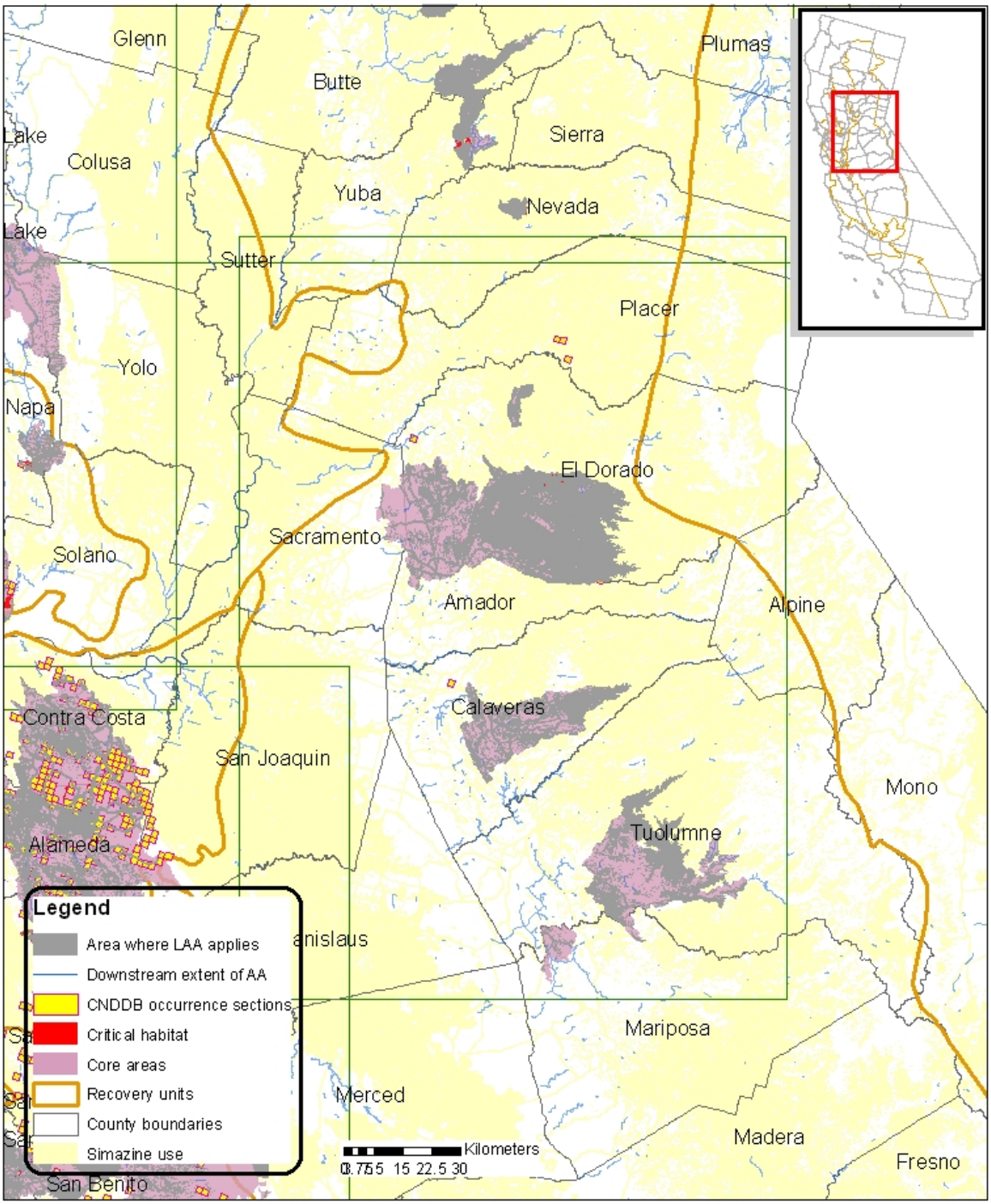
Areas where LAA applies - RU 1,2



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

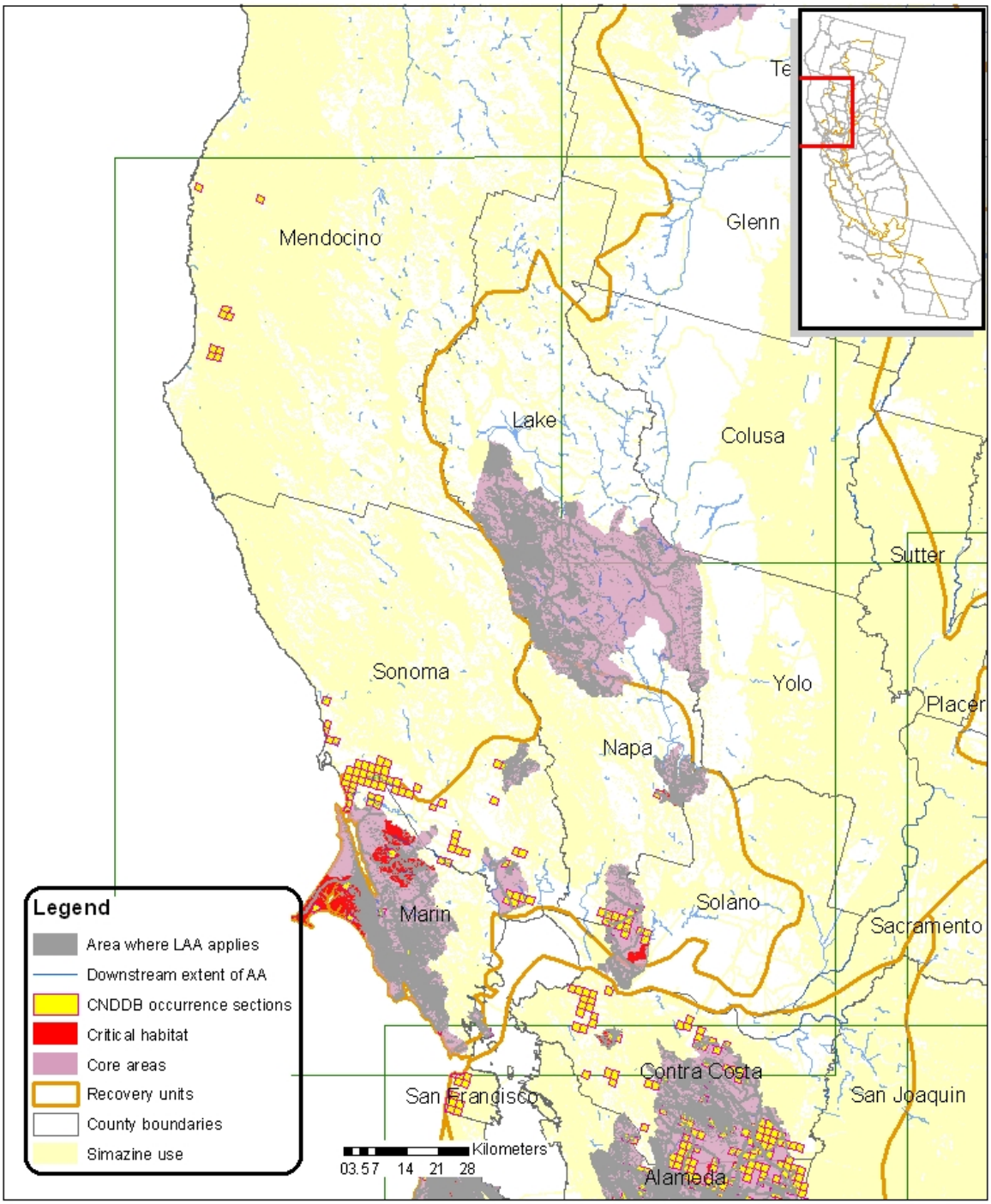
Areas where LAA applies - RU 1



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

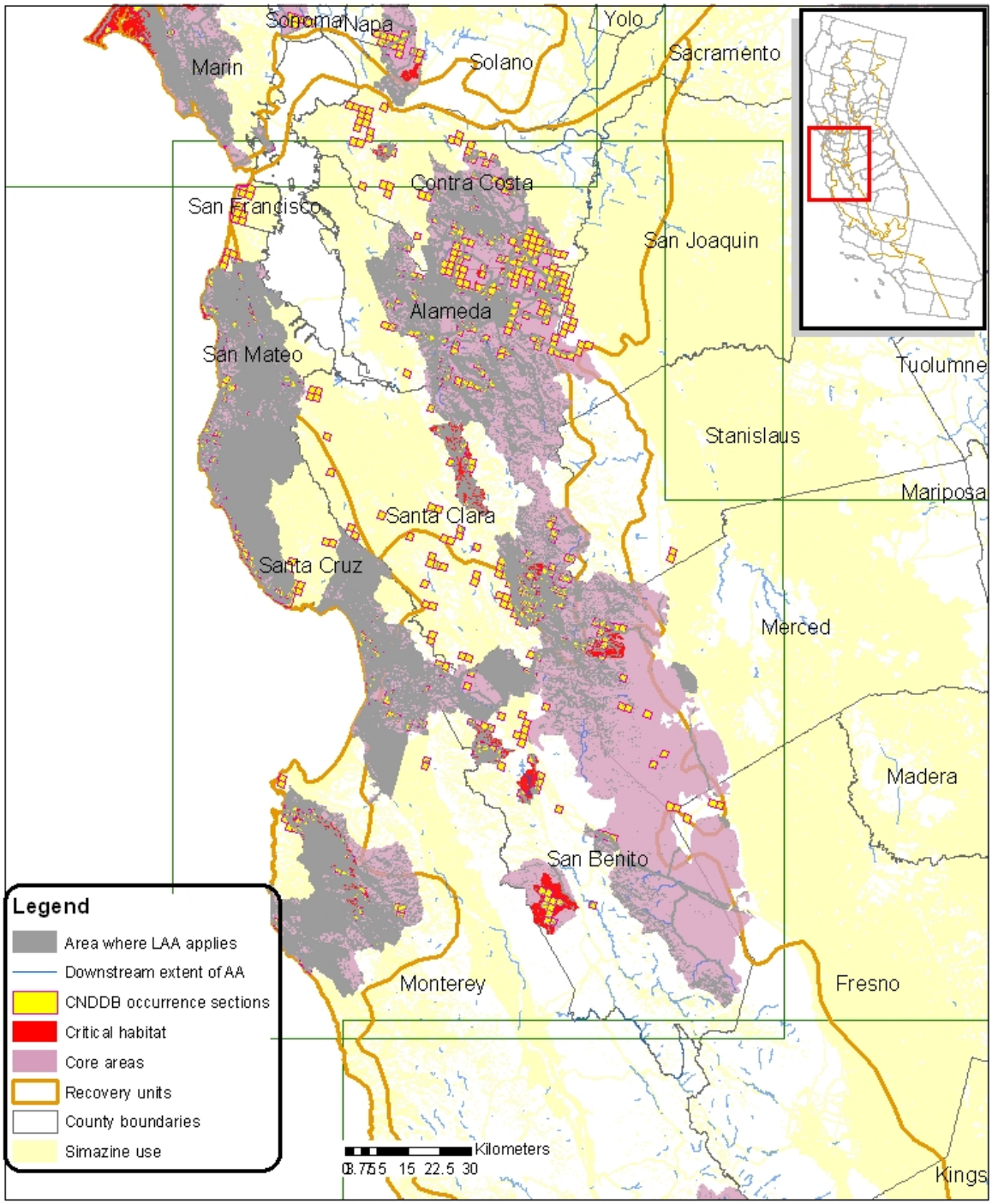
Areas where LAA applies - RU 2,3



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

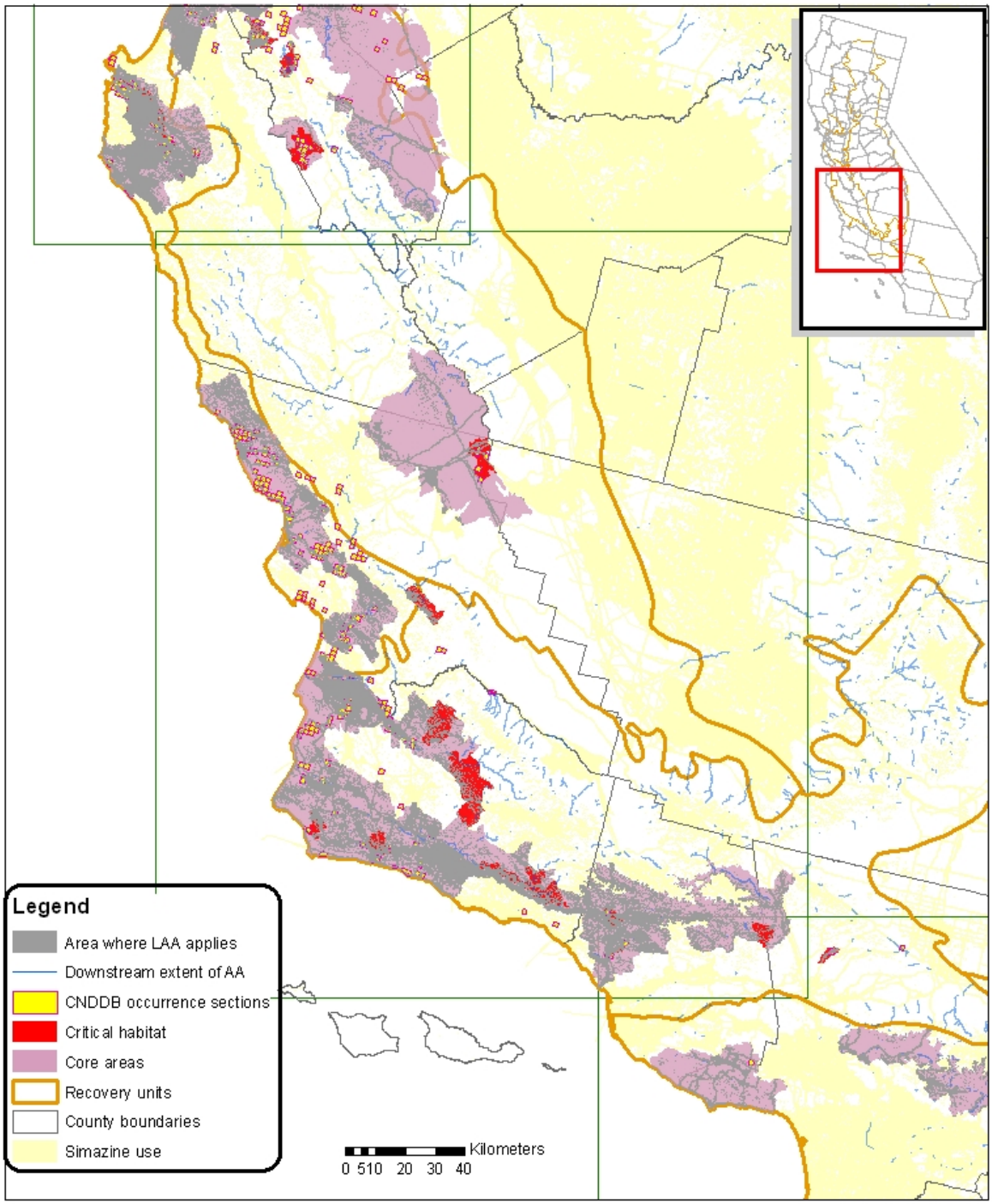
Areas where LAA applies - RU 4,5,6



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

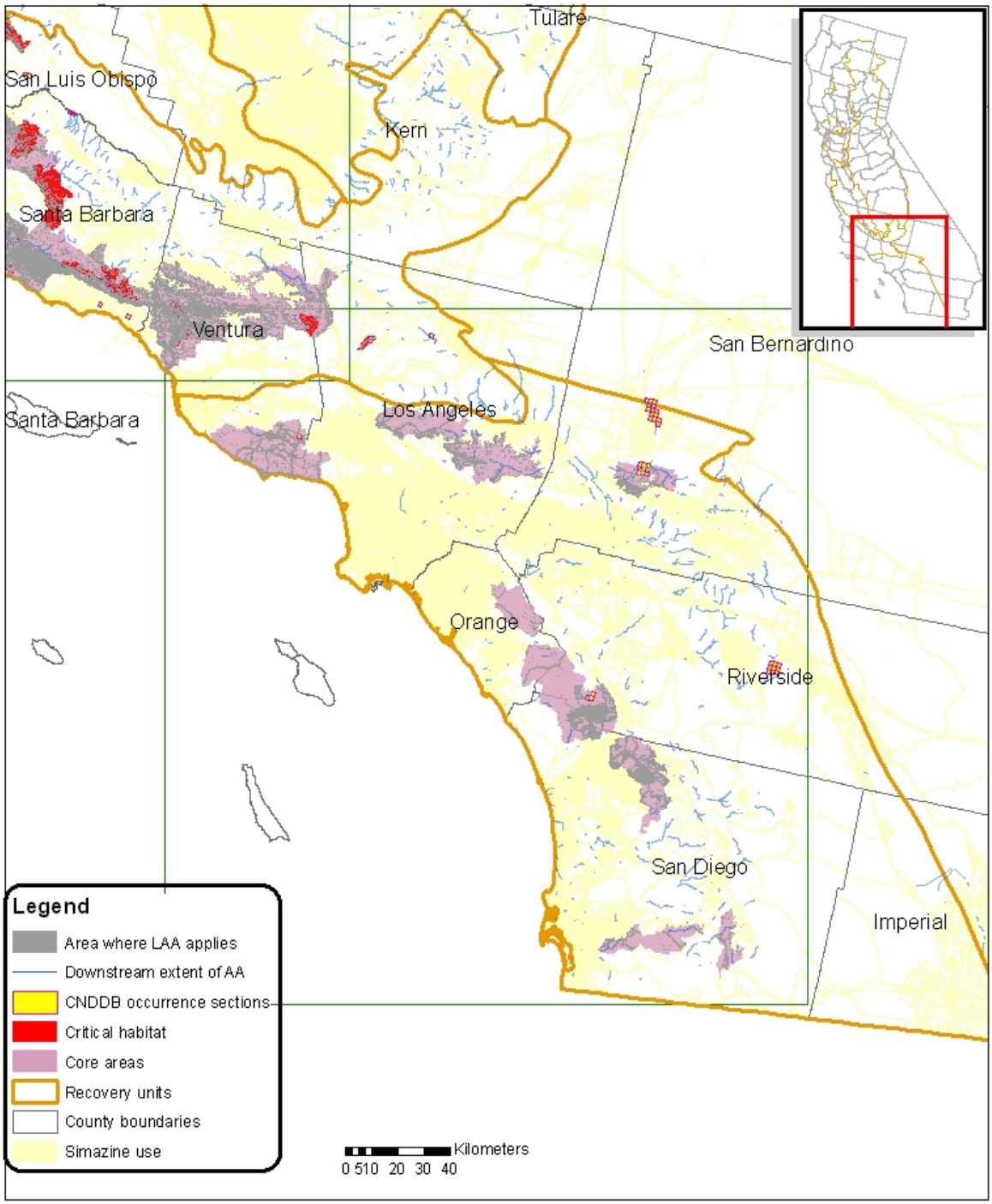
Areas where LAA applies - RU 5,6,7



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

Areas where LAA applies - RU 7,8



Compiled from California County boundaries (ESRI, 2002), USDA National Agriculture Statistical Service (NASS, 2002) Gap Analysis Program Orchard/ Vineyard Landcover (GAP) National Land Cover Database (NLCD) (MRLC, 2001)

Map created by US Environmental Protection Agency, Office of Pesticides Programs, Environmental Fate and Effects Division. October, 2007. Projection: Albers Equal Area Conic USGS, North American Datum of 1983 (NAD 1983)

References for GIS Maps

Crop Maps

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GAP. Gap Analysis. National Biological Information Infrastructure. www.nbii.gov

NASS, 2002. USDA National Agriculatural Statistics Service. www.nass.usda.gov

MRLC, 2001. Multiresolution Land Characteristics (MRLC) www.mrlc.gov

Habitat Maps

US FWS 2002 California red-legged frog General Recovery Zones

US FWS 2002 California red-legged frog Core Areas

US FWS 2005 Final Critical Habitat for California red-legged frog

CNDDB Occurrence Sections – California Natural Diversity Database
http://www.dfg.ca.gov/bdb/html/cnddb.html

ESRI, 2002. Detailed Counties, ESRI data and maps. (1:24,000) www.esri.com